

Amendments to the Specification:

Please replace paragraph [0003] of the published specification with the following amended paragraph:

Medical endoscope is used for diagnostic and therapeutic purpose during Micro-invasive surgery due to its incomparable function, because the morpho-characters and excision of focus can be directly observed and performed on endoscopy. But the terrible problem is medical cross-infection in particular some virus infection, such as Hepatitis and AIDS, via blood or other body fluid by endoscopy. Therefore, disposable small medical instruments should be recommended. However endoscopes as an interfering instrument are quite high cost at present. People have not found any excellent way to effect and conveniently sterilize and prevent endoscopes from damage simultaneously. By now autoclaved method is recommended for some rigid, endoscopes' sterilization due to application of some optical glues which could bear high temperature and high pressure. Flexible endoscopes are widely used in the market, but they cannot withstand with the high temperature and high pressure, and the flexible endoscopes cannot be completely sterilized. ~~But flexible endoscopes can't bear with autoclaved way, also disinfection solution can't thoroughgoing flow into varied channels to sterilize wholly.~~ Since ninety decade last century, some foreign patents discussed the difficult issues thereinbefore. They generally set a disposal sheath on outside endoscope and transform endoscope body (this patent's applicant, JIANG, Kerang, also provides some patent applications numbered 03136141.2 and 02158217.3 et al), and disposal channel is settled on outside of the endoscope channel. The U.S. Pat. No. 5,050,585, provides that of the disposal channel settled in inside of traditional endoscopes, and the anterior opening of disposal channel connected with the disposal sheath which covers on the endoscope to protect endoscope's outer surface and inner surface of opened channel, that is a good idea. Japanese Pentax company on this basis applied lots of patents for improvement later on. However, as to information from applications' publication, the cross-infection problem of medical endoscope in clinic application has yet not solved. In order to produce this kind of product, it will have yet a quite long way to go. More details are also needed to improve, such as fluid-air channel's position in endoscope system and other located connecting

structure and correctly treat the disposal channel after use etc. All of such problems must be solved by new way.

Please replace paragraph [0006] of the published specification with the following amended paragraph:

For protecting an improved permanent endoscope, the innovative uses a disposal sheath to ensure the endoscope not contaminant in clinic application. The said disposal sheath consists of an ~~a~~-end cap, a capsule, a disposal channel, a soft double cavity fluid-air channel, a jet channel, a locking ring. Said end cap connects the disposal capsule which located in outside endoscope and the disposal channel which located in the endoscope channel and the soft double cavity fluid-air channel, thus all together connect with and join in a whole body, then to protect the endoscope's outer surface and channel's inner surface as well. The end cap is made from some elastic or partial elastic transparent materials, its inner end face's size fits in the end face's size of anterior endoscope. The end cap's inner face matches the endoscope body. A jet channel orifice is coaxially set at the anterior end cap to fix the jet channel. The space between the ditch and the channel need to tight glue with certain adhesive. A fixing seat or a fixing orifice of the disposal channel is set at the endoscope's operation orifice's position in the end surface of the end cap for convenient connecting with the disposal channel. The outer surrounding of posterior end cap is sheathed in the anterior end of the capsule. The capsule is made from elastic flexible thin wall nonpoisonous, non-immune biocompatible and lubricant or lubricated, medical material. The capsule covers the outside of endoscope. The posterior capsule connects a locking ring. While pull to lengthen, the elastic capsule can be locked by the locking ring to ensure the anterior inner face of the end cap constantly and tight close to anterior end face of the endoscope. Since no space between the capsule end cap end anterior tip of the endoscope, reflected complicated light formed by lighting ray at observation system can be decreased. The upper and lower handles of the locking ring have corresponding oblique teeth to tighten or loose the posterior capsule. The fluid-air channel is connected to posterior end of the jet channel, and located in between the endoscope and the capsule. The ~~the~~-fluid-air channel can be a single cavity or double cavities, or the structure of two single cavity channels together join in one cavity channel

at nearing jet channel site, its channel's size can be cylinder, or flat orifice. Said, ~~said~~ the structure of single cavity channels, may be two flat channels which is formed via heat pressure, and parallel together with each other thin wall channels. The flat channels are not easy to bent and blocked, but can be inflated and expanded into two cylinder channel cavities when the flowing fluid-air flows into it. For the structure of the double cavity fluid-air channel, there is no septum between the anterior part of the double cavity fluid-air channel and the jet channel. But ~~The flat channels is not easy to be bent and to block the flowing fluid air also can be inflated and expanded into two cylinder channel cavities while flowing fluid air flow into them, said the structure of double cavity fluid air channel. Inside of the anterior part of it which sheathes on the jet channel has not any septum, but inside the later part of the double cavity channel, there is~~ has a septum, and at the back of the jet channel anterior septum, there is ~~has~~ a round head which fits in the inner wall of the channel cavity. There, ~~and there is~~ a section of incision, respectively at situation of the septum's two sides, separated from the channel wall in order to make the septum swing towards any side of channel cavity to block another ~~the~~ channel which the flowing fluid needs not flow into.

; ~~The~~ The posterior soft double cavity channel (including two channels) is sheathed on two rigid connecting tubes that ~~is~~ has two parallel channels which are welded together. The, ~~the~~ posterior orifice of two rigid connecting tube are sheathed in two adapters of the two soft channels connecting with fluid and air channels respectively. The jet of the jet channel which is connected with the anterior double cavity channel, sprays out the fluid or air and direct towards the outer surface of the end cap and fits in the object lens situated inside of the end cap. The disposal channel is made of flexible, durable, hard to bent, bear negative pressure and electric arc-resistant medical materials, its anterior tip connects with the end cap. Its connecting method includes ~~to~~ directly sheathing and gluing ~~sheathe and glue~~ the disposal channel on the end cap by set a channel seat or sheathing ~~to sheathe~~ by a channel seat which can bear high temperature and be electric arc-resistant, glued in fixing orifice of the end cap.

Please replace paragraph [0038] of the published specification with the following amended paragraph:

In figures: 1 is an endoscope, 2 is an end cap, 3 is a disposal channel, 3.1 is a channel seat, 3.2 is a V-shape channel orifice, 3.3 is a other V-shape channel, 4 is a fluid-air channel, 4.1 is a septum cavity, 4.2 is septum of round head, 4.3 is double channels adapters, 4.4 is connecting material of double channels adapters, 4.5 is rigid curved channel, 4.6 is single cavity channel, R1 is curve rate of channel cavity, R2 is curve rate of septum end head, 5 is a jet channel, 6 is a fluid-air channel adapter, 7 is a fluid-air exit, 8 is a capsule, 9 is a locking ring, 10 is an endoscope channel, 11 is an endoscope channel exit, 12 is a three-way sealing cap, 12.1 is the first elastic sealing orifice, 12.2 is the second elastic sealing orifice, 12.3 is the third elastic sealing orifice, 12.4 is a lower adapter, 12.5 is a sucking channel adapter, 12.6 is an upper orifice, 13 is a guide tube, 13.1 is a guide tube core, 13.2 is a handle, 13.3 is an orientation pin, 13.4 is a long orifice, 13.5 is a lower orifice of guide tube, 13.6 is an end face of handle, 13.7 is a lower end of tube core, 13.8 is a tube body, 14 is a kind of heat fusion forceps, 14.1 is a lower forceps orifice, 14.2 is an electric resistance thread, 14.3 is an upper forceps orifice, 14.4 is a wire, 15 is an another kind of heat fusion forceps, 15.1 active board 16 is a sucking channel adapter 17 is a A-sucking channel.

Please replace paragraph [0042] of the published specification with the following amended paragraph:

In the anterior endoscopy, there is not any fluid-air channel or jet channel. The fluid-air channel and the jet channel are removed to the outside of the endoscope position between the endoscope 1 and the capsule 8. The jet channel is fixed in the jet channel ditch which located in one side of the end cap, the fluid-air exit 7 and the sucking channel adapter 16 are set on the posterior endoscope. The fluid-air exit 7 and the sucking channel adapter 16 connect the fluid-air channel adapter 6 and the sucking channel 17 respectively. The sucking channel adapter 12.5 of the three-way sealing cap 12 sheathed with another end of the sucking channel 17.

Please replace paragraph [0043] of the published specification with the following amended paragraph:

On the other aspect, the disposal sheath consists of the end cap_2, the capsule 8, the disposal channel 3, the locking ring 9, the fluid-air channel 4, the jet channel 5, the fluid-air channel adapter 6, the three-way sealing cap_12, the sucking channel_17 and guide tube 13 etc. The invention also provides the traction forceps and two kinds of heat fusion forceps 14 and 15 for simultaneous melting and cutting the disposal channel 3 after the use. The the-end cap 2 is made of transparent or partial flexible transparent material. To decrease the parasitic light which comes from the reflection into an observation system~~To decrease the complication light, out of illumination outgoing light and reflect into observation system,~~ this invention provides two kinds of program: due to conventional endoscopes' anterior end surface are not flat, and have different size, the invention offers the end cap as shown in FIG. 8. The end surface of the end cap is made of elastic, flexible, thin membrane, so that it can close to the illumination out-going light and the observation system while it is pulled and tightened and the complication light reflected between them can be decreased. For this reason, the invention provides special endoscope-its anterior end surface is quite flat. As shown in FIG. 6 and FIG. 7 a kind of end cap, improved by this invention, processes its flat anterior inner surface. This makes closely contact possible between anterior end surface of endoscope and inner end surface of the end cap 2 which can decrease complication light as well. The posterior end of the jet channel 5 is connected with the fluid-air channel. The jet orifice of the jet channel 5 directs towards, outer end surface of the end cap relative to the object lens' position, and buckle up in the through ditch 2.3, its posterior end sheathes the fluid-air channel 4 the exit of the jet channel 5 directs towards the outer surface of the end cap relative to the object lens site. Anterior end cap, similar with anterior end of the endoscope, at the position of endoscope channel, opening the end surface of end cap 2 connects with the disposal channel 3. there are three connection ways: 1) as shown in FIG. 6, adopting the channel seat 3.1 to connect the end cap 2 with adhesive; 2) as shown in FIG. 7, the channel seat 3.1 and the end cap 2 formed a whole body; 3) as shown in FIG. 8, without any channel seat, the tip of the disposal channel turned over outwards. The capsule tight covers the outside of end cap 2. The parts that the end cap 2 connected with including the capsule 8, the jet channel 5, the disposal channel seat 3.1, the disposal channel 3, all applied with medical adhesive.

Please replace paragraph [0045] of the published specification with the following amended paragraph:

The disposal channel 3 is made from sturdy, elastic, high temperature resistance, electric arc resistance and bear negative pressure material, its length and diameter matches the length and diameter of the endoscope channel. Its anterior end is adhered on the end surface of the end cap 2, sites in the endoscope channel. In order to solve the inserting difficulty of the disposal channel 3, the operation can be: firstly to insert an instrument such as biopsy forceps into the endoscope channel 10, let the instrument's head surpass anterior end of endoscope channel, then outside of the instrument sheathes in the disposal channel, they are inserted into the endoscope channel 10 altogether. As shown in FIG. 19 and FIG. 20, a traction forceps can be used, if necessary, to pull the disposal channel 3 passing through the endoscope channel 10. The traction forceps has two pieces of forceps piece, one piece is a cylinder and other piece is a half bullet size for contacting most area of channel wall. The lock of the forceps handle has some locking teeth While the disposal channel 3 passes through the endoscope channel, the capsule 8 and the end cap 2 are pulled by the locking ring 9 and heightened. Two fluid-air channels adapters 6 sheathe on the fluid-air exit 7 of the endoscope. The fluid-air channel can be single cavity or double cavity channel or the structure of two single cavity channels are joined together in one channel at nearing jet channel site, the channels shape may be cylinders, or flat shape as shown in FIG. 5 the fluid-air channel consisted of two single cavity channels, may be consisted of two flat channels, which is formed via heat pressure ,and parallel together with each other. The advantage of the flat channel is that it cannot block the flowing fluid or air when it is bent with the endoscope. The flowing fluid or air cannot enter into the closing channel. In addition, less space is occupied because of the structure of the flat channel~~The advantage of the flat channel is can not bent and can not be blocked by the flowing fluid air, in addition, the closing channel which is not entered into by the flowing fluid air only occupies less space. As as shown in FIGs. 3 – 4, FIG. 3, 4) said of the structure of two fluid-air channel 4, it has not any septum inside the sheathed part with the jet channel 5, but inside the later part of the double cavity channel has a septum cavity 4.1 and on the anterior septum part of the double cavity channel at the back of the jet channel swinging set a septum of round head 4.2, its curve rate of~~

double cavity septum head R2 fits the curve rate of the channel cavity. There are two incisions separated from the cavity wall in the septum, respectively located at two sides of the certain section of the septum of round head 4.2, owing to the force from the flowing fluid-air, the septum section of round head 4.2 can be swung towards the left or right to block the one of two cavities of the channel which is needed to let the flowing fluid or air pass and prevent the fluid or air refluxing into another channel~~There are two incisions separating from the cavity wall, located at two sides of the certain section of the septum of round head 4.2, the septum section of round head 4.2 can be swung towards the left or right, to block the one of two cavities of the channel which flowing fluid needs not to flow into, prevent injecting fluid or air from back flowing into this one cavity.~~ The posterior end of the soft double cavity channel sheathes on the rigid double channels adapters 4.3, between the double channels there is a connecting material (in this application example is a welding pad piece), the posterior end of double channels adapters sheathe in two single cavity channels 4.6, which ~~Which~~ again sheath on two rigid curve channels 4.5 connecting the fluid-air channels adapters in order to convenience connect with two fluid-air exits of the endoscope.

Please replace the abstract of the specification with the following amended abstract:

The purpose of this invention is absolute elimination of medical cross-infection by endoscope. It offers an endoscope system with a disposal sheath. The disposal sheath via anterior end cap connects the capsule which covers the outside of the endoscope and the disposal channel which sheathe in the endoscope channel and the fluid-air channel, and all these parts are joined together in a whole body. After the disposal channel is passed through the endoscope channel, its posterior disposal channel can be blocked into the elastic sealing cap via the guide tube, the posterior disposal channel's orifice need to be heated and melted and cut up simultaneously and its cut edge is in shape of V-shape by using one kind of heat fusion forceps after the use and before the retracting from the endoscope channel. A fluid-air exit and a sucking channel adapter are set on the posterior endoscope, convenience to connect with the fluid-air channel and the three-way sealing cap, the fluid-air channel may be single cavity channel or double cavity channel or two single cavity channels join in one channel together at nearing jet channel site, the channel

sizes may be cylinders, or flat sizes. Both the outer surface of the endoscope and the inner surface of the endoscope channel are protected from pollution by the disposal sheath, thus ensures patients to safely use the ~~permanent~~ endoscope for many times.